

# Anti-Spike-RBD-hIgG1

Monoclonal human IgG1 antibody against SARS-CoV and SARS-CoV-2 Spike (clone CR3022)

Catalog code: srbd-mab1-3

<https://www.invivogen.com/sars2-spike-cr3022-mab-isotypes>

For research use only, not for diagnostic or therapeutic use

Version 23L11-MM

## PRODUCT INFORMATION

### Contents:

- 3 x 100 µg of Anti-Spike-RBD-hIgG1, provided azide-free and lyophilized

**Target:** SARS-CoV & SARS-CoV-2 Spike receptor binding domain (RBD)

**Source:** CHO cells

**Isotype:** Human IgG1

**Light chain type:** Kappa

**Clonality:** Monoclonal

**Purification:** By affinity chromatography with protein G

**Formulation:** 0.2 µm filtered solution in a sodium phosphate buffer with glycine, saccharose, and stabilizing agents

### Storage

- Product is shipped at room temperature. Store lyophilized antibody at -20 °C.
- Reconstituted antibody is stable for 1 month when stored at 4 °C and for 1 year when aliquoted and stored at -20 °C. Avoid repeated freeze-thaw cycles.

### Quality control

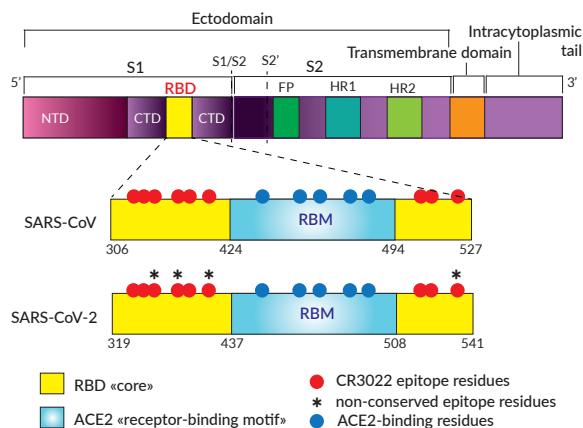
- The antibody isotype has been confirmed by ELISA.
- Anti-Spike-RBD-hIgG1 has been functionally validated by ELISA using a coated [SARS-CoV-2 Spike-RBD-His](#) fusion peptide.
- Absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using [HEK-Blue™ TLR2 and TLR4 cellular assays](#).

## PRODUCT DESCRIPTION

Anti-Spike-RBD-hIgG1 is a recombinant monoclonal antibody (mAb) originally described under the name of CR3022, a SARS-CoV neutralizing antibody<sup>1</sup>. Anti-Spike-RBD-hIgG1 features a variable region that cross-reacts with the receptor binding domain (RBD) of the Spike protein of SARS-CoV and SARS-CoV-2, and the constant region of the human IgG1 (hIgG1) isotype. Anti-Spike-RBD-hIgG1 was generated by recombinant DNA technology, produced in CHO cells, and purified by affinity chromatography with protein G.

### CR3022 scientific background

Spike RBD is a privileged candidate for vaccination and treatment strategies in the context of COVID-19. The anti-Spike RBD clone CR3022 is a SARS-CoV neutralizing antibody that was obtained from the screening of an antibody-phage library and converted to a human IgG1 format<sup>1</sup>. Modeling and *in vitro* studies have shown that CR3022 is also binding to SARS-CoV-2 RBD<sup>2</sup>. This cross-reactivity is explained by the 86% shared amino acid identity between the CR3022 epitopes from the two viruses<sup>2</sup>.



**Simplified schematic of CR3022- and ACE2-binding sites in SARS-CoV and SARS-CoV-2 Spike RBD**

However the neutralization potency of CR3022 for SARS-CoV-2 is still unclear<sup>3,4</sup>. Importantly, CR3022 does not interfere with the ACE2 binding motif<sup>1-3</sup>. Thus, CR3022 could be used alone or in combination with other antibodies or soluble ACE2 to maximize the neutralization of SARS-CoV-2 (Wuhan-Hu-1, D614) and mutant isolates<sup>5</sup>.

### IgG1 Isotype effector function

Human IgG1 binds with high affinity to the Fc receptor on phagocytic cells and therefore, Anti-Spike-RBD-hIgG1 displays high effector function, including antibody-dependent cell-mediated cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC) (see reverse side).

1. ter Meulen J. *et al.*, 2006. Human monoclonal antibody combination against SARS coronavirus: synergy and coverage of escape mutants. *PLoS Med.* 3(7):e237.
2. Yuan M. *et al.*, 2020. A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV. *Science*. DOI: 10.1126/science.abb7269.
3. Huo J. *et al.*, 2020. Neutralization of SARS-CoV-2 by destruction of the prefusion Spike. *bioRxiv*. DOI:10.1101/2020.05.05.079202.
4. Tian X. *et al.*, 2020. Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody. *Emerging Microbes & Infections*. 9(1):382-385.
5. Korber B. *et al.*, 2020. Spike mutation pipeline reveals the emergence of a more transmissible form of SARS-CoV-2. *bioRxiv*. DOI:10.1101/2020.04.29.069054.

## METHODS

### Anti-Spike-RBD-hIgG1 resuspension (200 µg/ml)

*Note:* Ensure you see the lyophilized pellet before resuspension.

- Add 500 µl of sterile water to the vial and gently pipette until completely resuspended.
- Prepare aliquots and store at 4 °C or -20 °C until required.

### TECHNICAL SUPPORT

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## ANTIBODY ISOTYPE COLLECTION

For your research, InvivoGen provides an **Anti-Spike-RBD isotype family**. This collection consists of mAbs comprising the variable region of the CR3022 clone, and differing constant regions of both **native** and **engineered human** or **murine** isotypes. The isotypes differ in their functional and effector functions, such as antibody-dependent cell-mediated cytotoxicity (ADCC), antibody-dependent cellular phagocytosis (ADCP), and complement dependent cytotoxicity (CDC), as presented in the table below. The Anti-Spike-RBD isotype family will assist you in studying the various effector functions of the different isotypes, and help you determine which isotype is the most suited for your application.

### Effector functions of native and engineered human isotypes

Effector functions	Native			Engineered
	IgG1	IgM	IgA1	IgG1Nq
ADCC	++	+	+	-
ADCP	+++	-	+	-
CDC	++	+++	-	+/-

### Effector functions of native and engineered murine isotypes

Effector functions	Native	Engineered
	IgG2a	IgG1e3
ADCC	++	-
ADCP	+++	-
CDC	++	-

## RELATED PRODUCTS

Product	Catalog Code
Anti-Spike-RBD-hIgG1Nq	srbd-mab12-3
Anti-Spike-RBD-hIgM	srbd-mab5-3
Anti-Spike-RBD-hIgA1	srbd-mab6-3
Anti-Spike-RBD-mIgG2a	srbd-mab10-3
Anti-Spike-RBD-mIgG1e3	srbd-mab15-3

**Note:** For human or murine isotype controls, please visit our website <https://www.invivogen.com/antibodies>

Spike-RBD-Fc	fc-sars2-rbd
Spike-RBD-His	his-sars2-rbd

**Note:** For more products related to COVID-19 research, please visit our website <https://www.invivogen.com/covid-19>

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